



US Army Corps  
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# ***US Army Corps of Engineers Ergonomics Program***

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# ***US Army Corps of Engineers HQ Safety & Health Staff***

- PRESENTER:



- Robert Stout

Industrial Hygiene & Occupational Health Program  
Manager

441 G Street N.W., Washington D.C. 20314-1000

Phone: 202 761-8566

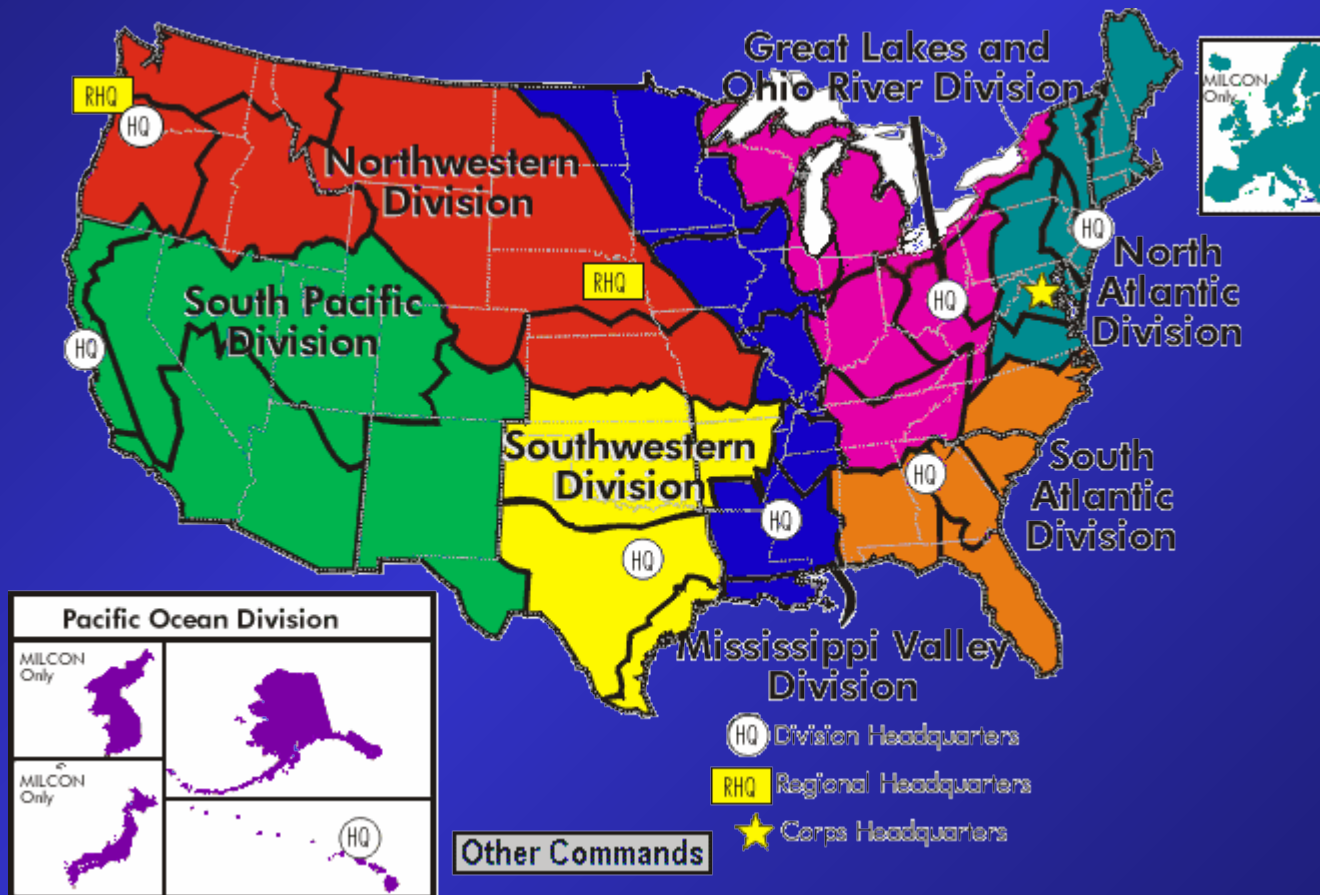
Fax: 202 761-1369

Email: [robert.e.stout@usace.army.mil](mailto:robert.e.stout@usace.army.mil)



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# US Army Corps of Engineers Division Boundaries





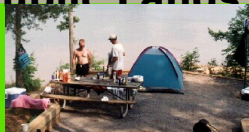
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# *Civil Works Support to the Nation*

**75  
Hydropower  
Dams**



**11.7 Million  
Acres  
Public Lands**



**383 Major  
Lakes &  
Reservoirs  
376 M  
Visitors/yr**

**11,000  
miles  
Inland  
Waterways**

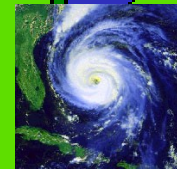
**276 Locks**

**299 Deep Draft  
Harbors**



**627 Shallow Draft  
Harbors**

**Emergency  
Operations**



**400 miles  
Coastal  
Structures**

**4340  
Recreation  
Areas**



**8500 Miles of  
Levees**



**\$500M Annual  
Dredging Costs**



**Environmental  
Stewardship/  
Regulatory**



- US Ports & Waterways convey > 2B Tons Commerce
- Foreign Trade alone Creates > \$160B Tax Revenues

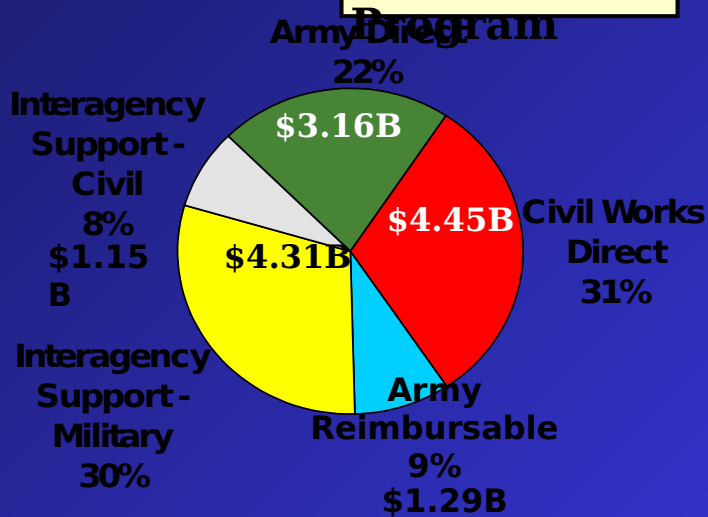




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# USACE -- The Army's Engineer MACOM

**FY 02**



## CAPABILITIES

Construction Management  
Cost Estimating  
Damage Assessment  
Disaster Response  
Engineering/Design  
Hard Target Assessment  
Legal Services  
Planning  
Procurement/Contracts  
Project Management  
R & D  
Real Estate  
Value Engineering

*Executes Programs for*



Secretary of the Army  
Chief of Staff



**Commander, U.S. Army  
Corps of Engineers**

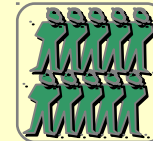


8 Divisions  
41 Districts  
2 Centers  
7 World Class Labs  
1 Engineer Battalion

## Personnel

**Uniformed = 557**

**Military  
Programs**



10K

**Civil Works**



25K

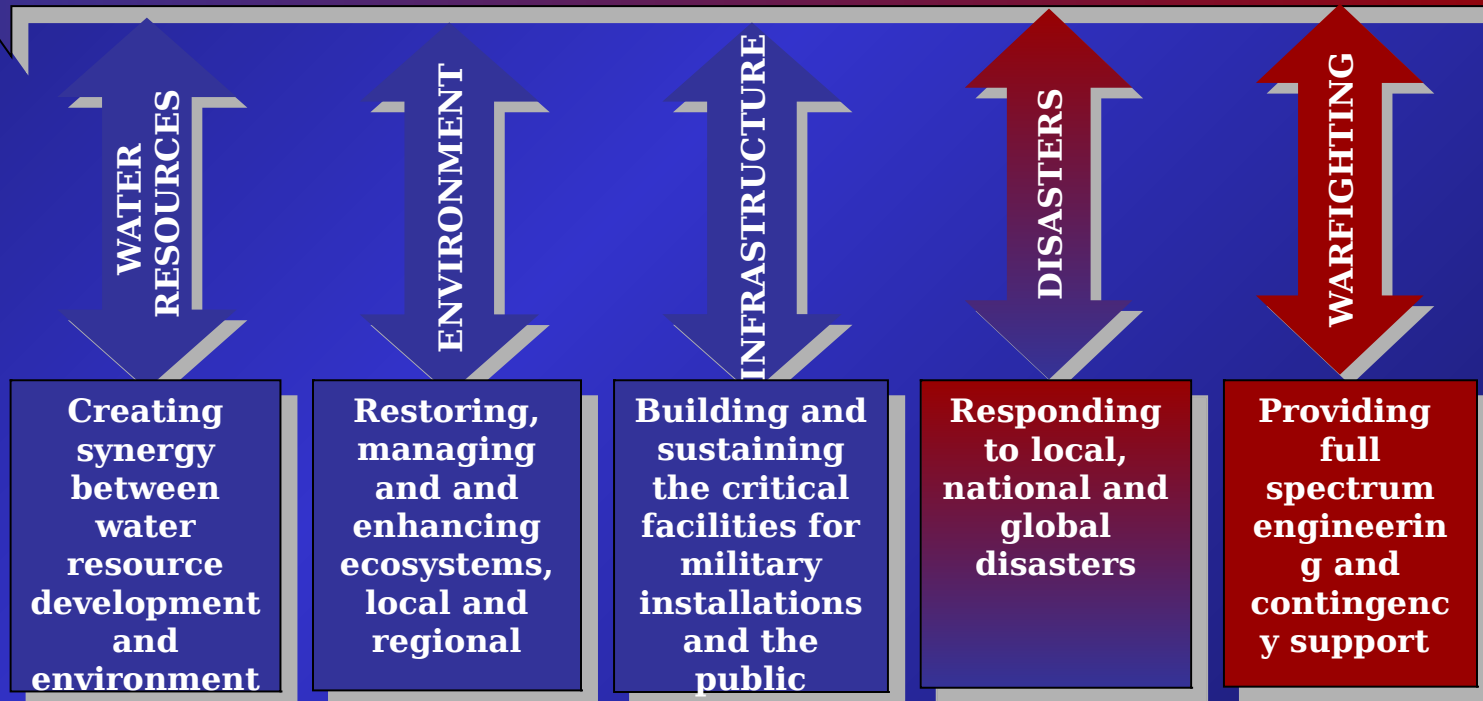


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# **USACE Operational Spectrum**

## ***"From Peace to War"***

### **Spectrum of USACE Operations**





# USACE Army Missions

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## Military Programs

- Military construction
- Base operations
- Environmental restoration
- Geospatial Engineering



Terrain Analysis

Temporal Analysis

Tactics & Effects

Terrain Models

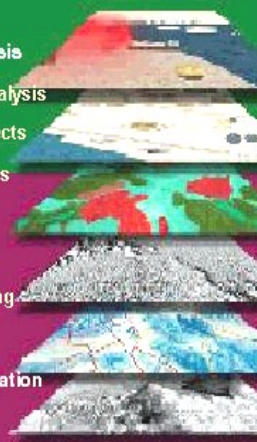
Feature

Hypsometric

GeoPositioning

Imagery

Terrain Generation



## Research & Development

- Military engineering
- Terrain & Geospatial
- Installations & Environment

## Real state



- Acquire, manage & dispose
- DOD recruiting facilities
- Contingency operations

## Interagency

- DOD, Federal
- State & Local
- International

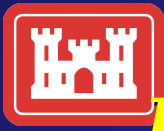


## Civil Works



- Navigation, Shore Protection
- Flood control, Hydropower
- Disaster response
- Environmental restoration
- Water Supply





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# *Engineer Support to the Warfighter*

**Tactical Military Hydrology**



**Contingency Airfields**



**Utility Assessment and Repair**



**Cold Regions Theater of  
Operations Engineering**



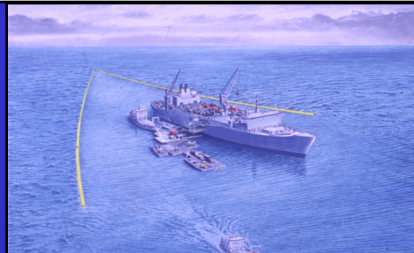
**Base Camp Construction,  
Protection & Survivability**



**Rapid Mapping**



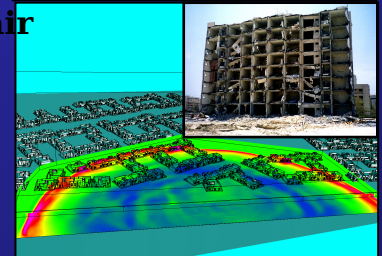
**Logistics Over the Shore**



**Bridge Assessment and Repair**



**Force Protection**







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# Engineer Research and Development Center

- 2014 Employees
- 1029 Scientists & Engineers
  - 533 Master's Degrees
  - 266 Doctorate Degrees
- \$1.2 Billion in Research Facilities & Equipment
- \$568 Million Annual Program



**Cold Regions Research  
Engineering Laboratory**

Hanover,  
NH



**Construction Engineering  
Research Laboratory**

Champaign, IL



**Topographic Engineering  
Center**

Alexandria, VA



**Coastal and Hydraulics  
Laboratory  
Environmental Laboratory  
Geotechnical and Structures  
Laboratory  
Information Technology  
Laboratory**

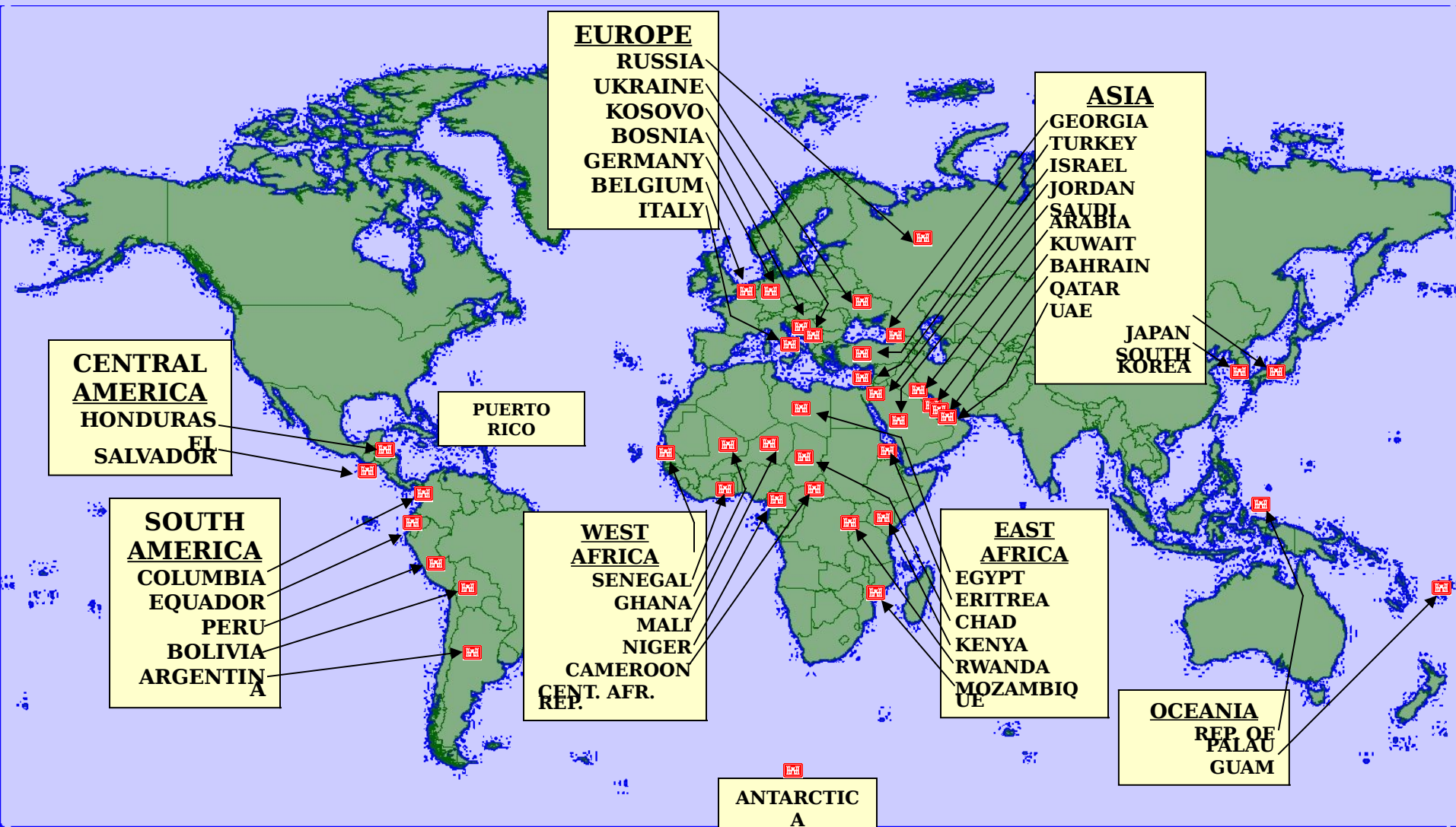




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# Global Construction Support

(AS OF 19 NOV 01)







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# Emergency Support Function #3 Public Works and Engineering USACE in 2001

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## Natural Disasters



### Flood Events

- Red River of the North/Upper Mississippi
- Houston/Southeast Texas
- West Virginia

## Pacific Northwest Earthquake

## Terrorism

### *New York City*



### *Pentagon*







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# USACE New York City Response September 11, 2001 Aftermath



-Emergency Evacuation/Rescue  
-Waterborne Transportation



-Deployable Tactical Operations  
System Support



-Structural Search and Rescue  
-Debris Removal Planning/Management

**160+ Specialists deployed**  
**Structural/Search and Rescue**  
**Communications**  
**Logistics**  
**Administrative**  
**Prime Power**  
**Debris**  
**Floating Plant crews**  
**Public Affairs**



-Emergency power support  
to financial district



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## Access USACE on the

Hot Topics & Issues

Who We Are

Where We Are

Services for the Military

Services for the Public

Doing Business with Us

Working for Us

News and Information

Search and Reference

Sitemap

Search word/  
phrase:

Submit Query



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For an alternate version of the  
US Army Corps of Engineers web site

<http://www.usace.army.mil/>





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# ***US Army Corps of Engineers NIOSH Ergonomic Assessment***

- 1990 - North Central Division commissioned study to evaluate musculoskeletal hazards to the upper limbs and back at dry dock maintenance areas, lock and dam facilities and barge maintenance facilities with NCD
- Results indicated NCD should implement and ergonomics program





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# ***US Army Corps of Engineers NIOSH Ergonomic Assessment***

- USACE began to look at ergonomic hazards Corps wide and instructed they be included the position hazard analyses of workforce
- Did not take any formal action to implement program until around 1996



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# ***US Army Corps of Engineers CHPPM***

## ***Ergonomic Assessments***

- Mississippi River Revetment Operations (1996)







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# ***US Army Corps of Engineers CHPPM Ergonomic Assessments***

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- Dredge Essayons - West Coast







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# ***US Army Corps of Engineers CHPPM***

## ***Ergonomic Assessments***

- Lock and Dam Operations at Bonneville & the Dalles (Columbia River) 1996







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# ***US Army Corps of Engineers CHPPM Ergonomic Assessments***

- Navigation Lock Control Rooms





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# ***US Army Corps of Engineers CHPPM***

## ***Ergonomic Assessments***

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- Washington Aqueduct (Provides water to Washington D.C)







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# ***US Army Corps of Engineers Ergonomics Program***

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- Do I have a need for a fully developed ergonomics program or should I just concentrate on office ergonomics?
  - Review Missions and Functions
  - Break out Manpower by Type of Work Performed
  - Analyze workforce by age
  - For “Office” Category Work Look at Existing Furniture, Lighting and Automated Equipment
  - Analyze Accident/Illness Data (Reports and OWCP)
  - Analyze other information available
  - Consult with experts like the Army CHPPM for their opinion



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# ***US Army Corps of Engineers Ergonomics Program***

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## Answer the Question

- For the Corps of Engineers, our answer was YES. We determined we needed to implement a comprehensive ergonomics program.
- How?



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# ***US Army Corps of Engineers Ergonomics Program***

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## Obtain Top Leadership Commitment

- Provide Commander Awareness Briefing
- Provide Economic Layout of Costs
- Explain political climate (Congress, OSHA, DoD)
- Request full commitment
- Ensure commitment communicated to all senior leaders and field commanders





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# ***US Army Corps of Engineers Ergonomics Program***

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## Budget for Necessary Resources

- Don't shoot to high. Be practical
- Ensure that budget does not have large out-year tails
- Ensure Top Leadership “greases the wheels” with RM types and budget committee personnel in advance - Remember, you are probably a “small fish”
- Use funds obtained judiciously



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# ***US Army Corps of Engineers Ergonomics Program***

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## Partner with Expert Advisors

- Know who you need to work with (Choose a service-oriented organization)
- Don't get too complicated. Keep it simple
- Watch out for the "Sharks". They will eat you alive. Go for the porpoise, they understand you,..... like the CHPPM.



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# ***US Army Corps of Engineers Ergonomics Program***

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## Train your Key Personnel in Advance

- Select a Primary and an Alternate at each major location to serve as Ergonomic Program Coordinators (EPCs)
- Have them complete a 40 hour course (such as the one taught by the CHPPM)
- Provide other training (8 and 16 hour courses) to targeted groups.
- Provide awareness training to all





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# ***US Army Corps of Engineers Ergonomics Program***

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## Issue Clear Implementing Guidance

- Engineer Regulation, ER 385-1-96, “USACE Ergonomics Program Policy”.
- Engineer Pamphlet, EP 385-1-96, “USACE Ergonomic Program Procedures”.
- Both issued on 1 June 2000 by Major General



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# ***US Army Corps of Engineers Ergonomics Program***

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## Issue Clear Implementing Guidance (cont)

- Provide reasonable time frame for implementation
- USACE commands were instructed to be fully implemented by end of FY 01



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# ***US Army Corps of Engineers Ergonomics Program***

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## Assess Program Implementation

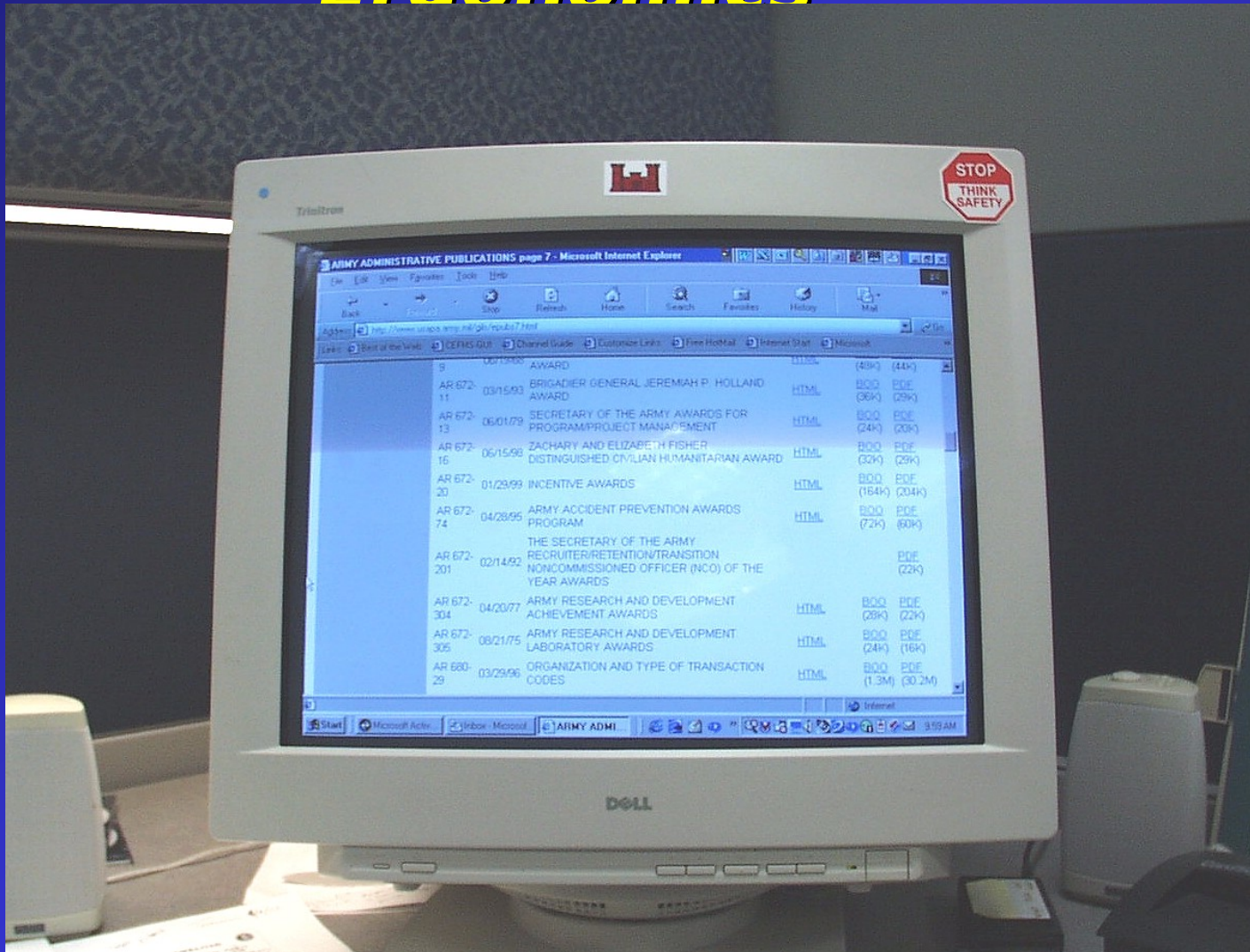
- Follow-up with Program Assessments  
(Obtain support for this step if  
resources not available)
- Determine Successes and  
Shortcomings.





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# US Army Corps of Engineers HQ, Office Ergonomics





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# ***US Army Corps of Engineers HQ, Office Ergonomics***







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# ***US Army Corps of Engineers HQ, Office Ergonomics***







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# ***US Army Corps of Engineers HQ, Office Ergonomics***





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# ***US Army Corps of Engineers HQ, Office Ergonomics***







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# ***US Army Corps of Engineers HQ, Office Ergonomics***







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# ***US Army Corps of Engineers Louisville District Program***

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- The Louisville District has established an ergonomics program. The delegation of the Ergonomic Program Coordinators by the Commanding Officer was done prior to the establishment of the program in the district on the 30 July 2001. James Marshall of the Safety Office is the Ergonomics Program Coordinator and Doug Archer of Operations is the Alternate Ergonomics Program Coordinator.



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# ***US Army Corps of Engineers Louisville District Program***

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- The Chief of the Safety and Occupational Health Office implemented an ergonomics program on 6 August 2001 as Appendix U in CELRL 385-1-43, The Louisville District's Safety and Occupational Health Program Manual.



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# ***US Army Corps of Engineers Louisville District Program***

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- The ergonomics sub-committee was established under the District Advisory Council for Occupational Safety and Health (DACOSH) on 28 August 2001. They're eight members on the sub-committee. They are providing guidance for implementing the ergonomics program and have had several meetings discussing issues within the district. There is fair participation from the committee members. The sub-committee will be providing a status review of the program after the first year in August of 2002 and present the finding to the DACOSH committee.





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# ***US Army Corps of Engineers Louisville District Program***

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- Currently employee training is being conducted at various Field Offices throughout the District. There has been about 14 Field Offices/training sessions held. These sessions included OP's, construction and regulatory personnel. More are scheduled.
- Our program implementation is on track and in good condition. Employee training is ongoing. We are monitoring any employee complaints or concerns and dealing with them on an individual basis.



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# ***US Army Corps of Engineers ERDC Laboratory Program***

- “Since implementation of the ergonomic program at ERDC the number of OSHA recordable cases for MSD's has been reduced by 50%. In FY 2000 we had 38 cases of MSD's and in FY 2001 we had 17 cases of MSD's.”



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# ***US Army Corps of Engineers Jacksonville District Program***

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- Jacksonville District requires all supervisors to provide and document new employees SOH orientations. Proper lifting is a standard part of this training, and office ergonomic hazards and lifting and carrying hazards are addressed by the District's position hazard analyses. The District also has two certified occupational health nurses who provide the HQSAJ staff personal advice about health promotion, including advice, as deemed appropriate, about weight loss, proper lifting, and office ergonomics.





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# ***US Army Corps of Engineers Jacksonville District Program***

- Jacksonville Ergonomic Injury/Illness Statistics:

	<u>FY00</u>	<u>FY01</u>	<u>FY02</u>	
• Ergonomic Injuries/Illnesses	11	2	1	
• Geology/Exploration Section	6	0	0	back injuries (5), shoulder (1)
• South FL Operations Office	3	0	0	back injuries (2), shoulder (1)
• Logistics Management Office	1	0	0	back injury
• Eng. Division (Admin)	0	1	0	possible carpal tunnel syndrome
• Planning Division	1	0	0	possible carpal tunnel syndrome
• Survey boat Section, Ops	0	1	0	back strain
• Regulatory Division	0	0	1	back strain, no med exp/no lost time
• Ergonomic FECA Claims	10	2	0	
• Ergonomic-Related Lost or 59*	30**	0		
• Restricted Duty Days				

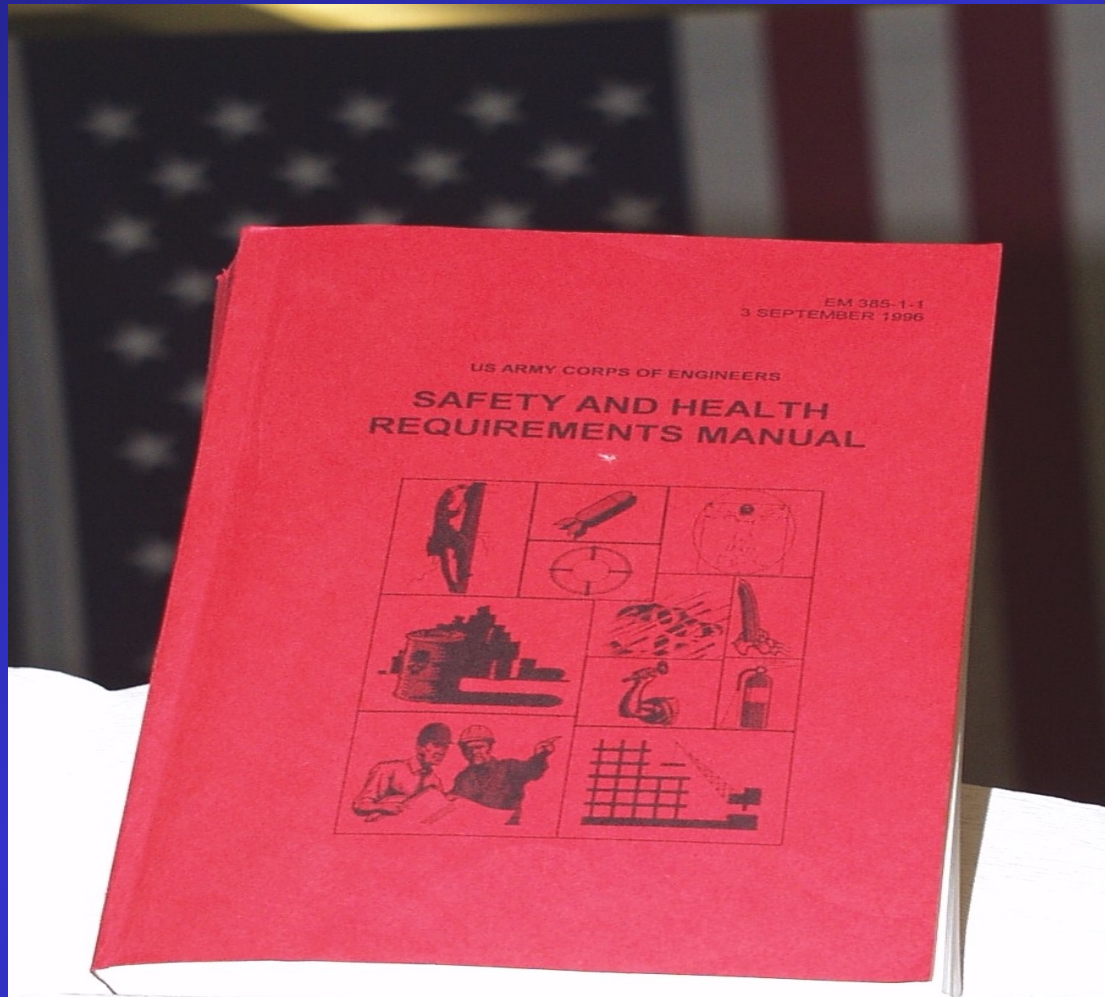
- \*Only one of these days was restricted duty rather than lost time.
- \*\* All lost-time.



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# ***US Army Corps of Engineers Ergonomics in Construction***

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# US Army Corps of Engineers Ergonomics in Construction

FIGURE 1-1

ACTIVITY HAZARD ANALYSIS

ACTIVITY \_\_\_\_\_ ANALYZED BY/DATE \_\_\_\_\_

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
<i>Identify the principal steps involved and the sequence of work activities</i>	<i>Analyze each principal step for potential hazards</i>	<i>Develop specific controls for each potential hazard</i>

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<i>List equipment to be used in the work activity</i>	<i>List inspection requirements for the work activity</i>	<i>List training requirements, including hazard communication</i>

EM 385-1-1  
3 Sep 96





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# ***US Army Corps of Engineers Ergonomics in Construction***

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## 06.K CUMULATIVE TRAUMA PREVENTION

06.K.01 Work activities that require workers to conduct lifting, handling, or carrying, rapid and frequent application of high grasping forces, repetitive hand/arm manipulations, tasks that include continuous, intermittent, impulsive, or impact hand-arm vibration or whole body vibration and other physical activities



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# ***US Army Corps of Engineers Ergonomics in Construction***

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06.K.02 When work activities that stress the body's capabilities are identified, the employer shall establish a cumulative trauma disorders prevention plan and incorporate it in the accident prevention plan. The plan shall incorporate processes that recognize cumulative trauma hazards, isolate causative factors, inform and train workers, and implement controls.



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# ***US Army Corps of Engineers Ergonomics in Construction***

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06.K.03 Control measures to minimize hand-arm vibration shall include: adherence to the TLV guidelines as specified in the ACGIH in "Threshold Limit Values and Biological Exposure Indices"; the use of anti-vibration tools and/or gloves; implementation of work practices that keep the worker's hands and body warm and minimize the vibration coupling between the worker and the vibration tool; and application of





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## DEFINITION

Cumulative trauma disorders- disorders of muscles, tendons, peripheral nerves, or vascular system. These can be caused, precipitated, or aggravated by intense, repeated, or sustained exertions, motions of the body, insufficient recovery, vibration, or cold.



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# ***US Army Corps of Engineers Ergonomics in Construction***

## FEDERAL ACQUISITION REGULATION

- FAR Clause 36.513 Accident Prevention
  - Instructs Contracting Officer when to insert FAR Clause 52.236-13, Accident Prevention into Federal contracts



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# ***US Army Corps of Engineers Ergonomics in Construction***

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## FAR Clause 36.513 Accident Prevention (continued)

- Federal contracts for construction, dismantling, demolition, or removal of improvements
- Federal contract for services to be performed at Government facilities when technical representatives advise that special safety and health precautions are appropriate





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# ***US Army Corps of Engineers Ergonomics in Construction***

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## FAR Clause 52.236-13, Accident Prevention

As prescribed in 36.513, insert the following clause:

### **ACCIDENT PREVENTION (NOV 1991)**

(a) The Contractor shall provide and maintain work environments and procedures which will (1) safeguard the public and Government personnel, property, materials, supplies, and equipment exposed to Contractor operations and activities; (2) avoid interruptions of Government operations and delays in project completion dates; and (3) control costs in the performance of the contract.



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# ***US Army Corps of Engineers Ergonomics in Construction***

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## FAR Clause 52.236-13, Accident Prevention (continued)

(b) For these purposes on contracts for construction or dismantling, demolition, or removal of improvements the Contractor shall -

(1) Provide appropriate safety barricades, signs, and signal lights;

(2) Comply with the standards issued by the Secretary of Labor at 29 CFR Part 1926 and 29 CFR Part 1910; and

(3) Ensure that any additional measures the Contracting Officer determines to be reasonably



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# ***US Army Corps of Engineers Ergonomics in Construction***

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## FAR Clause 52.236-13, Accident Prevention (continued)

(c) If the contract is for construction or dismantling, demolition or removal of improvements with any Department of Defense agency or component, the Contractor shall comply with all pertinent provisions of the latest version of U.S Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, in effect on the date of the solicitation.

(d) Whenever the Contracting Officer becomes aware of any noncompliance with these requirements or any condition which poses a serious or imminent danger to the health or safety of the public or Government





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# ***US Army Corps of Engineers Ergonomics in Construction***

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## FAR Clause 52.236-13, Accident Prevention (continued)

notify the Contractor orally, with written confirmation, and request immediate initiation of corrective action. This notice, when delivered to the Contractor or the Contractor's representative at the work site, shall be deemed sufficient notice of the noncompliance and that corrective action is required. After receiving the notice, the Contractor shall immediately take corrective action. If the contractor fails or refuses to promptly take corrective action, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall not be entitled to any



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# ***US Army Corps of Engineers Ergonomics in Construction***

## FAR Clause 52.236-13, Accident Prevention (continued)

(f) Before commencing the work, the Contractor shall-

(1) Submit a written proposed plan for implementing this clause. The plan shall include an analysis of the significant hazards to life, limb, and property inherent in contract work performance and a plan for controlling these hazards; and

(2) Meet with representatives of the Contracting Officer to discuss and develop a mutual understanding relative to administration of the overall safety



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# ***US Army Corps of Engineers Ergonomics in Contracts***

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## Safety and Health Guide Specification

- Tri-Service Unified Facility Guide Specification (UFGS) Working Group (NAVFAC, US Army Corps of Engineers and Air Force)
- Update and Unify existing UFGS Safety and Health Guide Specification - 01525N (NAVFAC Proponent)
- Will include Clause Language for Ergonomics





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# ***US Army Corps of Engineers Ergonomics in Contracts***

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## Safety and Health Guide Specification

- Will include reference back to requirements of Section 06.K of EM 385-1-1
- Will cover activities such as Materials Handling, Use of Tools, Equipment Operations, Repetitive Work, Awkward postures, Surfaces for Walking and Working, etc.